

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.: To be assigned

Filing Date: To be assigned

Applicant: Nelson A. Kelly et al.

Group Art Unit: To be assigned

Examiner: To be assigned

Title: PHOTOELECTROCHEMICAL DEVICE AND METHOD  
OF MAKING

Attorney Docket: GP-303074 (8540R- 000035)

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Director of the United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicant hereby submits an Information Disclosure Statement for consideration by the Examiner.

**I. LIST OF PATENTS, PUBLICATIONS, AND OTHER INFORMATION**

The patents, publications and other information submitted for consideration by the Office (except unpublished U.S. patent applications) are listed on Form 1449 attached hereto.

**II. COPIES**

A. \_\_\_\_ Submitted herewith is a legible copy of (i) each U.S. patent application publication and U.S. and foreign patent; (ii) each publication or that portion which caused it to be listed; (iii) for each cited pending U.S. application, the application specification including the claims, and any drawing of the application which caused it to be listed including the claims directed to that portion; and (iv) all other information or that portion which caused it to be listed.

B. \_\_\_\_ Any patents, publications or other information which are listed on Form 1449 or on the copies of PTO-892, but which are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

U.S. Serial Number

U.S. Filing Date

C.  Because the present application was/is being filed after June 30, 2003, no copies of the U.S. patents or U.S. patent application publications which are listed on the attached Form 1449 are enclosed pursuant to the waiver of 37 C.F.R. § 1.98(a)(2)(i). Any foreign patent documents or non-patent literature listed on the attached Form 1449 are enclosed herewith.

D.  This is a PCT application in the entry of the National Phase in the United States. A copy of the International Search Report is attached for the Examiner's information. The documents listed on the International Search Report are listed on the attached Form-1449 for consideration by the Examiner and for listing on any patent resulting from this application. Since the International Search Report was from the US, EPO, or JPO search authorities, copies of these references should have been supplied to the USPTO under the trilateral agreement and are believed to be in the file of the above-identified application. (MPEP 1893.03(g))

III. CONCISE EXPLANATION OF THE RELEVANCE (check at least one box)

A.  Except as may be indicated below in (B), all of the patents, publications or other information are in the English language (concise explanation not required).

B.  A concise explanation of the relevance of each patent, publication or other information listed that is not in the English language is as follows (see 37 C.F.R. § 1.98(a)(3)):

1.  See the attached foreign patent office communication from a counterpart foreign application:
2.  English translations are provided for:
3.  Other:

C.  The following additional information is provided for the Examiner's consideration.

IV. CROSS REFERENCE TO RELATED APPLICATION(S)

A.  The Examiner is advised that the following co-pending application(s) contain(s) subject matter that may be related to the present application. By bringing this(these) application(s) to the Examiner's attention, Applicant(s) does(do) not waive the confidentiality provisions of 35 U.S.C. § 122.

Serial No.

Filing Date

Art Unit

10/608509

6/27/2003

unknown

V. THIS IDS IS BEING FILED UNDER

A. X 37 C.F.R. § 1.97(b): (check only one box)

1. X within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d) (37 C.F.R. § 1.97(b)(1)). No fee or certification is required.
2. \_\_\_\_ within three months of the date of entry of the national stage as set forth in §1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or certification is required.
3. \_\_\_\_ before the mailing of a first Office Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or certification is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the certification under 37 C.F.R. § 1.97(e) below; or, if no certification has been made, charge our deposit account a fee in the amount of \$180.00 as required by 37 C.F.R. § 1.17(p).
4. \_\_\_\_ before the mailing of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No fee or certification is required.

B. \_\_\_\_ 37 C.F.R. § 1.97(c): (check only one box)

- before the mailing date of either any Final Office Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution.

1. \_\_\_\_ No certification; therefore, a fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).
2. \_\_\_\_ See the certification below. No fee is required.

C. \_\_\_\_ 37 C.F.R. § 1.97(d):

- after the mailing date of either a Final Office Action under 37 C.F.R. § 1.113 or a Notice of Allowance under 37 C.F.R. § 1.311, yet on or before payment of the issue fee.

1. \_\_\_\_ See the certification below. A fee in the amount of \$180.00 is required by 37 C.F.R. § 1.17(p).

VI. CERTIFICATION UNDER 37 C.F.R. § 1.97(e): (check only one box)

The undersigned hereby certifies that:

A.  each item of information contained in this IDS was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(1)). See further statement under 37 C.F.R. 1.704(d) below in section VII, if applicable; or

B.  no item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS (See 37 C.F.R. § 1.97(e)(2)).

C.  Some of the items of information were first cited in a communication from a foreign patent office. As to this information, the undersigned hereby certifies that each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby certifies that no item of this remaining information contained in this IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned after making reasonable inquiry, no item of information contained in this IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this IDS.

VII. STATEMENT UNDER 37 CFR 1.704(d)

The undersigned hereby states that:

each item of information contained in this IDS was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in 37 C.F.R. 1.56(c) more than thirty days prior to the filing of this IDS.

VIII. PAYMENT OF FEES (check only one box)

A.  A check in the amount of \$180.00 is enclosed for the above-identified fee.

B.  Please charge Deposit Account No. 07-0960 in the amount of \$180.00 for the above-indicated fee. A duplicate copy of this paper is attached.

The above references are being cited only in the interest of candor and without any admission that they constitute statutory prior art, contain matter which anticipates the invention, or which would render the same obvious, either singly or in combination,

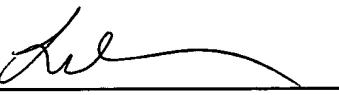
to a person of ordinary skill in the art. Furthermore, this Information Disclosure Statement shall not be construed as a representation that a search has been made.

If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule (with a petition if necessary) and charge the appropriate fee to Deposit Account No. 07-0960.

Please charge any additional fees or credit any overpayment pursuant to 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 07-0960.

Respectfully submitted,

Dated: Sept 15 2003

By:   
Linda M. Deschere  
Reg. No. 34,811

HARNESS, DICKEY & PIERCE, P.L.C.  
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FORM HDP-1449 (Based on Form PTO-1449)

**PATENT AND TRADEMARK OFFICE**  
**INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Sheet 1 of 3

ATTORNEY DOCKET NO.	SERIAL NO.
GP-303074 (R-35)	
APPLICANT	
Nelson A. Kelly et al.	
FILING DATE	GROUP

**U.S. PATENT DOCUMENTS**

Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
1.		4,466,869	08/21/1984	Ayers		
2.		4,511,638	04/16/1985	Sapru et al.		
3.		4,544,473	10/01/1985	Ovshinsky et al.		
4.		4,545,883	10/08/1985	Ovshinsky et al.		
5.		4,656,103	04/07/1987	Reichman et al.		
6.		4,698,234	10/06/1987	Ovshinsky et al.		
7.		4,737,379	04/12/1988	Hudgens et al.		
8.		4,891,330	01/02/1990	Guha et al.		
9.		4,859,532	08/22/1989	Oyama et al.		
10.		4,954,182	09/04/1990	Ovshinsky et al.		
11.		5,103,284	04/07/1992	Ovshinsky et al.		
12.		5,180,690	01/19/1993	Czubatyj et al.		
13.		5,231,047	07/27/1993	Ovshinsky et al.		
14.		5,670,224	09/23/1997	Izu et al.		
15.		6,063,258	05/16/2000	Sayama et al.		
16.		6,087,580	07/11/2000	Ovshinsky et al.		
17.		6,300,558	10/09/2001	Takamoto et al.		
18.		6,305,442	10/23/2001	Ovshinsky et al.		
19.		6,368,668	04/09/2002	Kobayashi et al.		
20.		6,380,601	04/30/2002	Ermer et al.		
21.		6,432,284	08/13/2002	Narayanan et al.		

Examiner:

Date Considered:

EXAMINER: Please initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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**INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Sheet 2 of 3

#### U.S. PATENT DOCUMENTS

Ref. Desig.	Examiner's Initials	Document Number	Date	Name	Class/ Subclass	(If appropriate) Filing Date
22.		6,471,834	10/29/2002	Roe et al.		
23.		6,521,381	02/18/2003	Vyas et al.		

#### OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)

Ref. Desig.	Examiner's Initials	
1.		Deng and Schiff, 2002, "Amorphous Silicon Based Solar Cells," chapter separately published on Xunming Deng's website: <a href="http://www.physics.utoledo.edu/~dengx/papers/deng03a.pdf">http://www.physics.utoledo.edu/~dengx/papers/deng03a.pdf</a> . Also published in 2003 by Deng and Schiff. Chapter 12, pages 505-565 in <i>Handbook of Photovoltaic Engineering</i> , ed. A. Luque & S. Hegedus, by John Wiley & Sons, Ltd.,
2.		Deng et al., 1998, "Study of Sputter Deposition of ITO Films for a-Si:H n-i-p Solar Cells," in Proceedings of 2nd World Conference and Exhibition on Photovoltaic Solar Energy Conversion, 700-703
3.		Arcosta et al., 1996, "About the Structural, Optical and Electrical Properties of SnO <sub>2</sub> Films Produced by Spray Pyrolysis from Solutions with Low and High Contents of Fluorine," Thin Solid Films, 288, 1-7
4.		Proceedings of the 2002 U.S. DOE Hydrogen Program Review NREL/CP-610-32405 entitled, "Photoelectrochemical Systems for Hydrogen Production", authored by Varner et al., 2002.
5.		"Proceedings of the 2000 Hydrogen Program Review" NREL/CP-570-28890 entitled, "Photoelectrochemical Hydrogen Production", authored by Miller and Rocheleau, 2000
6.		"High-efficiency Amorphous Silicon Thin Film Solar Cells" by Dr. Xunming Deng, 2 pages, Toledo website: dengx@physics.utoledo.edu.

Examiner:

Date Considered:

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FORM HDP-1449 (Based on Form PTO-1449) <b>PATENT AND TRADEMARK OFFICE</b> <b>INFORMATION DISCLOSURE CITATION</b> (Use several sheets if necessary)  Sheet 3 of 3	ATTORNEY DOCKET NO.	SERIAL NO.
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	FILING DATE	GROUP

**OTHER DOCUMENTS (including Author, Title, Date, Pertinent Pages, etc.)**

Ref. Desig.	Examiner's Initials	
7.		“Deng, Liao, Han, Povolny and Agarwal, (2000) “Amorphous Silicon and Silicon Germanium Materials for High-efficiency Triple-junction Solar Cells”, pages 89-95, website: <a href="http://www.celsevier.com/locate/solmat">www.celsevier.com/locate/solmat</a> .
8.		“Pilkington TEC Glass” (1999), 2 pages, product brochure.

Examiner:

Date Considered:

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